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June 8, 2000

VIA HAND DELIVERY

Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Ex Parte Filing in Deployment of Wireline Services Offering Advanced Telecommunications Capability: CC Dkt. 98-147

Dear Secretary Salas:

Yesterday afternoon this firm forwarded to you a White Paper produced by NHC Communications Inc. on a new testing system that it has developed that will solve the challenges raised in testing of lines when the lines are shared between an incumbent LEC and a competitive LEC. NHC's VCCS solution will minimize cost and speed development of DSL services.

The White Paper submitted unfortunately was a non-final version of the White Paper. Please discard that version and replace it with the enclosed final version.

Thank you for your time and consideration.

Sincerely,

Emily M. Williams

Emily M. Williams

Enclosure

cc: Lawrence E. Strickling
Yog Varma
Robert Atkinson
Carol Matty
Stacy Pies

WHITE PAPER:

NHC'S LINE-SHARING SOLUTION

NHC Communications' Solution is Capable of Resolving the Shared-Line Testing Problem in U.S. Market

The latest FCC rulings such as "line sharing" will open up the DSL market like never before, allowing CLECs to offer voice or data service to any ILEC subscriber

06/08/00

Introduction

In November 1999, the Federal Communications Commission (FCC) in the United States ruled that Incumbent Local Exchange Carriers (ILECs) must share lines with any Competitive Local Exchange Carrier (CLECs). The goal was to provide consumers with a cost-effective solution for receiving differentiated data services. The ruling (FCC 99-355) allowed ILECs to maintain the low frequency portion of the telecom line providing voice transmission and for CLECs to use the high frequency segment for data access solutions.

Splitters are required to separate the higher frequency portion of the line going to the CLEC collocation from the low frequency portion being used by the ILEC.This arrangement hampered the CLECs from performing full spectrum voice and data testing on the local loop. On the other hand, ILECs are concerned that testing by CLECs might interfere with the ILECs Plain Old Telephone Service (POTS).

This white paper is intended to explain the problem and put forth NHC's solution to the problem.

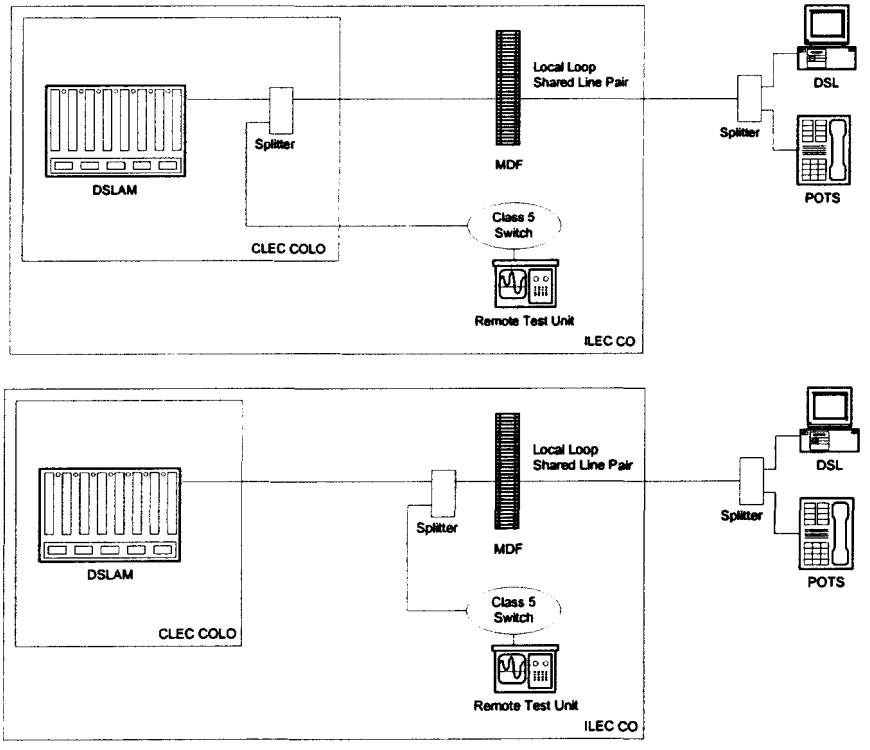
The Shared-Line Testing Problem

In a non-line sharing environment, the CLEC and ILEC each have full-spectrum test access to their respective lines. Since each LEC has full control over its copper lines, the ILEC can test the local loop for bridge taps, coils and other anomalies that are critical to reliable analog voice transmission and the CLEC can fully test the local loop for parameters that are critical for high-speed data transmission.

However, under the November line-sharing ruling, the ILEC is required to allow the CLEC to share the existing lines to allow it to provide high speed data service on the same line that the ILEC is providing its POTS service. The splitter is a piece of equipment that allows this to happen.

The splitter allows the CLEC to provide high-speed data service to the local loop but blocks it from providing POTS service that is handled by the ILEC. The splitter allows the ILEC to provide POTS voice service but blocks it from providing high speed data service.

The problem is that although the CLEC might not need to provide POTS service, it needs to perform tests at low frequencies. The presence of a splitter prevents the CLEC from conducting low-frequency testing that is crucial to qualifying the line for DSL services. The splitter may be located either in the CLEC collocation (COLLO) or in the ILEC central office (CO) as shown in the diagrams below.



For example, if the splitter is located in the ILEC CO, then the CLEC cannot conduct low frequency testing to ensure that there are no bridge taps or coils on the line. The presence of the taps and coils although not a problem to the ILEC's POTS service, is a major problem for the CLECs who can not test the low-frequency portion of the local loop. In order for line-sharing to work, the CLEC must have full-spectrum test-access to the shared line.

Local loop testing is a function that both CLEC and ILEC want to be able to do remotely. With the splitter in place, if a problem with the local loop arises, the CLEC can only perform high frequency tests , thus preventing it to determine the source of the problem. In order to diagnose a problem the CLEC or ILEC is

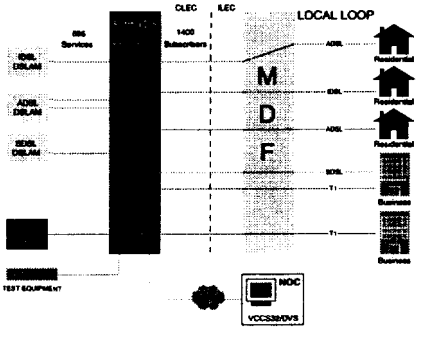
forced to send a technician to the CO to insert a tester before the line is split. This significantly increases the delay and cost in deploying DSL and other high-speed services.

NHC has studied the problem and has come up with a proposed solution that would allow the CLEC and ILEC to perform line testing on the unfiltered local loop via remote control and to circumvent the splitter for testing purposes. The solution involves the integration of its VCCS physical layer switching system into either the CLEC COLLO or the ILEC CO.

NHC is offering a solution based on its Virtual Cross-Connect System (VCCS). The VCCS solution is a copper cross-connect system that supports four main applications: DSL Loop Qualification, DSL Line Provisioning, Service Migration and Fallback Switching to help reduce the deployment and maintenance time for high-speed data services. Before describing the solution, the following section will explain what the VCCS solution is.

What is the VCCS solution?

The VCCS solution is NHC's integrated non-blocking copper cross-connect system that helps CLECs and ILECs qualify and provision DSL services remotely without the need to enter the CLEC's COLLO or ILEC's CO. The VCCS solution works with third party equipment such as Hekimian's and Tollgrade Remote Test Units, enabling the NHC's cross-connect to be used as a test access platform for rapid loop qualification. The VCCS solution is being deployed for DSL local loop qualification, provisioning, migration and fallback switching. The VCCS solution works with every major DSLAM vendor such as Promatory's IMAS.



The cross-connect hardware, NHC's Switchex/DVS, has a matrix size and loopback capabilities that allow multiple services to be provisioned and migrated remotely on-the-fly and on-demand, thereby minimizing truck-rolls needed to qualify and provision high speed data services. The VCCS solution allows the service provider to migrate users to higher speed data services quickly. The CLEC has the ability to use any available port on the DSLAM for fallback switching thus providing added value to both the CLEC and the subscriber.

The VCCS solution is managed via two key elements: VCCS32 and SNMP/DVS Controller.

VCCS32/DVS is the control and management software for NHC's Virtual Cross-Connect System (VCCS). VCCS32/DVS communicates with NHC's Switchex/DVS Copper Cross-Connect via the SNMP/DVS Controller to allow voice and high-speed data service providers to take full control of their copper cross-connect infrastructure.

VCCS32/DVS controls and tracks the physical connections within the Switches/DVS matrix, along with vital subscriber and equipment information. VCCS32/DVS features an intuitive Graphical User Interface (GUI) for greater ease of use. Port connections involve a simple drag & drop operation. VCCS32/DVS's integrated database tracks Switchex/DVS subscriber/service connections and organizes the network into multi-level geographical views by country, city and site location.

SNMP/DVS is the SNMP control interface for NHC's Switchex/DVS copper cross-connect switch, allowing Switchex/DVS to be managed via NHC's VCCS32/DVS Control and Management Software or managed via third party Network Management System (NMS). The SNMP/DVS is connected to an Ethernet LAN and is accessible via standard SNMP commands. The SNMP/DVS connects to Switchex/DVS via serial link. The device receives standard SNMP commands from the NMS or VCCS32/DVS and communicates them to Switchex/DVS. Support for API (application interfaces) within the SNMP/DVS and VCCS32 allow for customization to support NHC's proposed line-sharing solution. The next section will proceed to describe NHC's proposed line-sharing solution.

The NHC Solution – Two Approaches

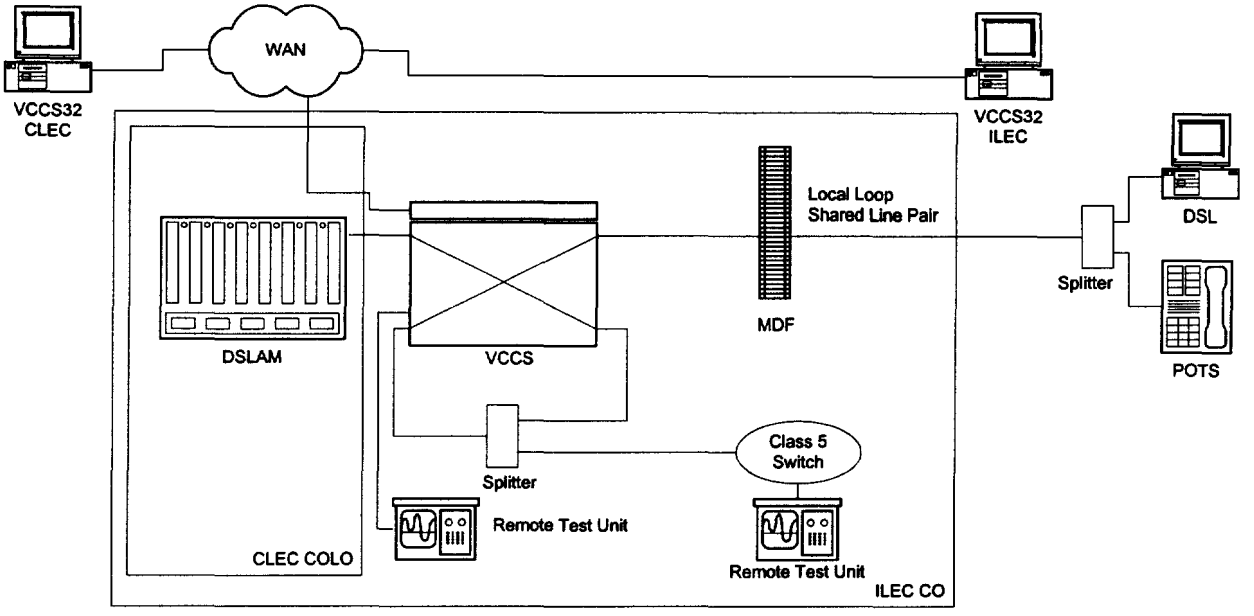
NHC is offering a solution based on its Virtual Cross-Connect System (VCCS). The VCCS solution is a copper cross-connect system that supports four main applications: DSL Loop Qualification, DSL Line Provisioning, Service Migration and Fallback Switching to help reduce the deployment and maintenance time for high-speed data services. For more information please see Appendix A. The NHC solution offers two approaches depending on where the splitter is located. They are described below.

SOLUTION A – SPLITTER IN ILEC LOCATION

In the first approach, the splitter is located in the ILEC CO. Without the VCCS solution, the ILEC would have full access to the local loop for testing but the CLEC would be blocked from doing low-frequency testing since the CLEC only has access to the high-frequency portion of the line. This would impede the CLEC from qualifying the line for DSL transmission.

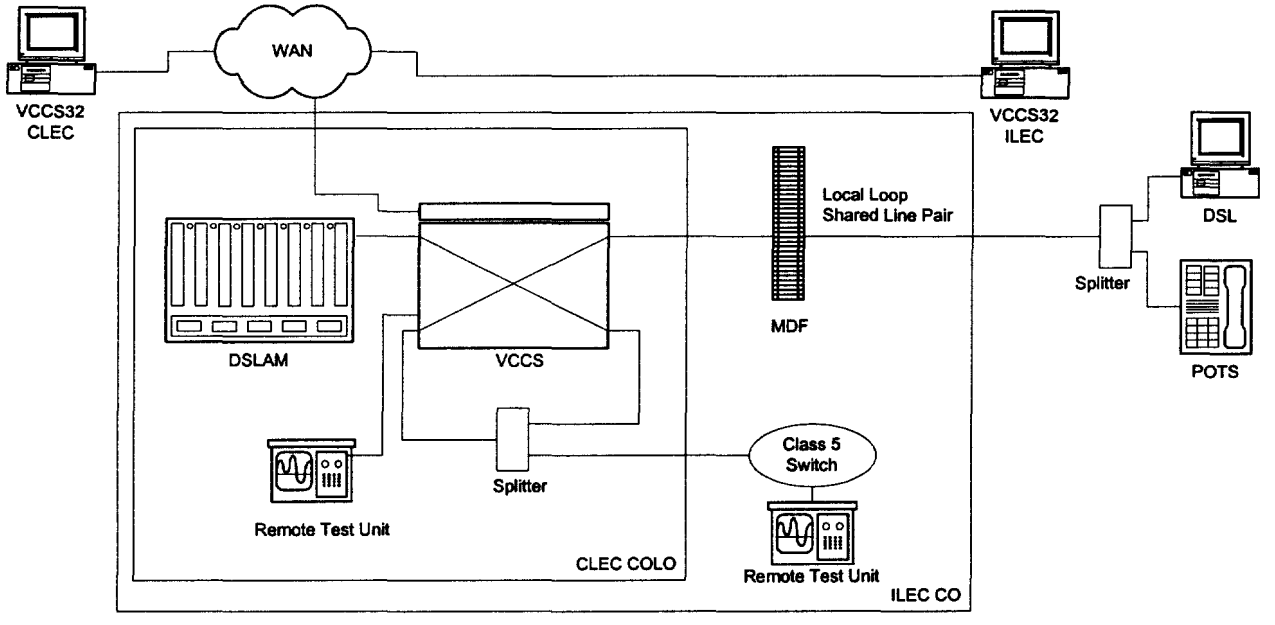
The solution entails placing NHC's VCCS Copper Cross-Connect solution between the MDF and the splitter. By placing the VCCS solution in the CO, both parties would have full access to the test head (RTU) and full spectrum testing of the line. To protect the ILEC, the CLEC would have limited cross-connect access only to shared lines. In order to protect against off-hook interference while the CLEC is qualifying a line for DSL services, the VCCS solution would have built-in protection that would prevent the test head from being connected to a line if the line was off-hook. When the line goes on-hook, connection to the line by the test head would be enabled.

This solution allows the ILEC to comply with the FCC November ruling and provide full test access capability to the CLEC.



SOLUTION B – SPLITTER IN CLEC LOCATION

In the second approach, the splitter is located in the CLEC COLLO. The solution entails placing NHC's VCCS Copper Cross-Connect solution in the CLEC COLLO. By placing the VCCS solution in the COLLO, both parties would also have full access to the test head (RTU) and full-spectrum testing of the line. To protect the CLEC, the ILEC would have limited cross-connect access only to shared lines.



Benefits and Issues

The benefits of the NHC solution include:

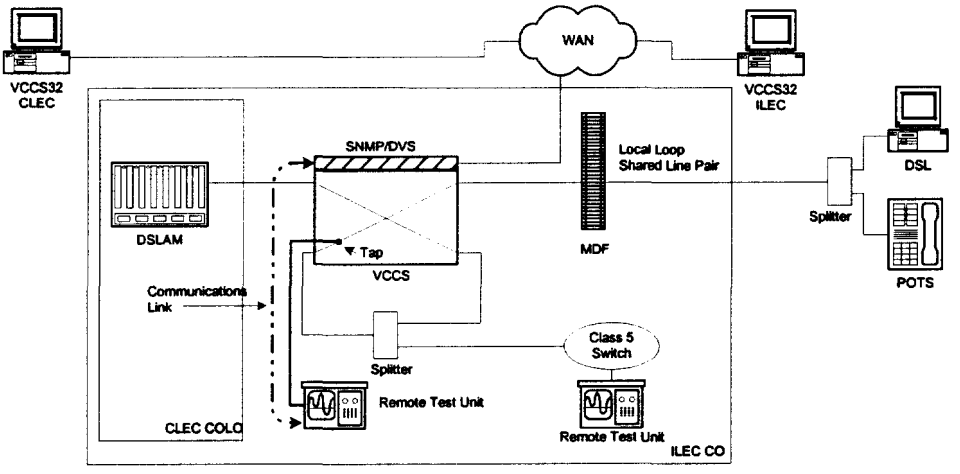
- Allows test access to continue to be done remotely as in an unshared line environment. The splitter problem is circumvented to allow both the CLEC and ILEC to have full-spectrum test access to the shared local loop. The result being shorter service deployment time, minimization of "truck rolls" and more effective maintenance of the shared local loop.

- Allows existing equipment to be used, thereby minimizing the investment costs needed by the Telecommunications Service Providers in order to overcome the technical obstacles of line-sharing.

A couple of issues regarding the NHC solution are highlighted:

- Although an additional port on the cross-connect is required for each shared line to overcome the splitter problem, the benefit of allowing the CLEC and ILEC to have mutual test-access to the shared lines is an urgent problem to overcome.

- On-hook testing: The ILECs have a major concern that if the CLEC has full-spectrum test access to the shared-line, the CLEC might run its tests while the subscriber equipment is off-hook and therefore interfere with the ILEC's voice service. In order to safeguard against interference with the ILEC's voice service during CLEC testing, NHC proposes that the test equipment vendor incorporate a feature that allows the tester to perform full-spectrum testing only when the line is on-hook. Furthermore, the test set would also communicate with NHC's VCCS solution via its SNMP/DVS Controller to allow disconnection of the line from the splitter only if the line is not in service. The following diagram illustrates the approach.



Essentially, when the test set initially taps into a shared line, it would check to see if the line is off-hook. If so, the tester would be prevented from executing its test routines. If the line is on-hook, then the test set would communicate with NHC's SNMP/DVS Controller to signal that the line is not in service and that the subscriber line connection may be broken to allow test access to the subscriber line or the service equipment. Once testing is complete, the tester would signal to the SNMP Controller that the connection may be restored.

Conclusion

The November 1999 shared-line ruling presents major incentives to deployment of DSL services. One of the challenges presented by line sharing, testing of shared lines, is solved by NHC's VCCS solution.

The VCCS solution supports four main applications; DSL Loop Qualification, DSL Line Provisioning, Service Migration and Fallback Switching and is comprised of three main elements:

1) Switchex/DVS: A true any-to-any copper cross that is installed between the CLEC's DSLAM and the CLEC's unbundled loops coming from the ILEC's MDF.

2) SNMP/DVS: NHC's Ethernet proxy agent that allows Switchex/DVS to be managed from any Ethernet LAN.

3) VCCS32/DVS: NHC's Windows-based cross-connect management software platform that controls Switchex/DVS via SNMP /DVS.

For more information about how NHC's VCCS Line-Sharing Solution, please contact NHC at 800-361-1965 or 514-735-2741.